OPTIONAL FORM NO. 10
5010-104

UNITED STATES GOVERNMENT

Memorandum

TO : Code 400

DATE: 22 March 1965

FROM : Code 370A

SUBJECT: Acetylene gas, manufacture of, information on

Ref: (a) Memo from Code 446 to Code 385 dated 2 March 1965

Encl: (1) Brief description of manufacturing process used by Norfolk Naval Shipyard to produce acetylene gas.
(2) Sludge Analysis

1. As requested by reference (a), enclosures (1) and (2) are forwarded.

J. A. WINFREY, Jr.
Lt Commander, USN

BRIEF DESCRIPTION OF MANUFACTURING PROCESS

USED BY NORFOLK NAVAL SHIPYARD TO PRODUCE ACETYLENE GAS

This shipyard employs a low-pressure non-automatic generator for manufacture of acetylene gas. It consists essentially of a carbide hopper and feed mechanism, generating chamber, wash box and gas holder. The carbide, nut size (1-1/4 x 3/8 in.) is fed from the hopper to the generating chamber by a rotary feed screw driven by a slow-speed, reciprocating water motor. As it drops into the generating chamber it falls upon a grating below the water level. This keeps the carbide off the floor of the generating chamber and holds it where the water can react with it from all sides and thus release the gas freely. As generation proceeds, the fine slaked residue falls below the grating, continuously leaving a fresh surface of the lumps of carbide exposed to the water. The residue collects in the conical shaped pit at the bottom of the generating chamber until it is drained out, during recharging, into a sump and then pumped into the river.

The acetylene passes out of the generating chamber through a discharge manifold and into the wash box, where it passes through a scrubber to remove any residue that might have been carried over. It is then discharged into a large gas holder for use in charging of cylinders.

ENCLOSURE (1)

5ND NNSY 3—msc (Rev. 11-59) Report NNSY 4730-26

NORFOLK NAVAL SHIPYARD
PORTSMOUTH, VA.
CHEMICAL LABORATORY
REPORT OF CHEMICAL ANALYSIS

Refer To File No. 453234
Folder No. 123

The sample marked Sludge from Acetylene Plant (X25)

Call No. Contract No. File No. Report No.

For Production Officer Supplied by Code 385 Mr. Mason

has been examined per Quantitative Analysis with the following results:

Water Content	95.92%
Alkalinity of the Water (mgkoh/gm water	2.6
Solids Content	4.08%
Ash of the Solids at 1600°F	65.36%

Analysis of the Solids based on "As received" Sample:

Siliceous Matter	0.08%
Carbonaceous Matter	0.40%
Oxides of Iron and Aluminum	1.28%
Lime (Carbonated, Slaked)	2.32%

Chief Chemist

CC: Shop #25

W. J. FRANCIS

ENCL (2)